

Serial No. 09/741,802

IN THE CLAIMS

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strike through~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please **AMEND** claims 13-18.

Please **CANCEL** claim 32.

1. (CANCELLED)
2. (PREVIOUSLY PRESENTED) The information processing apparatus according to claim 6, wherein said specific application-purpose instruction operating unit is built in as an intellectual property of an ASIC (Application Specific Integrated Circuit).
3. (PREVIOUSLY PRESENTED) The information processing apparatus according to claim 6, wherein the number of cycles control to issue the same succeeding instructions.
4. (PREVIOUSLY PRESENTED) The information processing apparatus according to claim 6, further comprising:
a rewritable register provided within a processor core of the processing apparatus,
wherein
said rewritable register prescribes a number of cycles from when an instruction of said specific application-purpose instruction operating unit is issued to when it becomes possible to use a result thereof, and said issuing of the instruction is controlled based on said number of cycles.
5. (PREVIOUSLY PRESENTED) The information processing apparatus according to claim 6, further comprising:
a rewritable register provided within a processor core of the processing apparatus,
wherein

Serial No. 09/741,802

said rewritable register prescribes a number of cycles from when an instruction of said specific application-purpose instruction operating unit is issued to when it becomes possible to issue an immediately subsequent instruction that is the same as the instruction of said specific application-purpose instruction operation unit, and said issuing of the same instruction in succession is controlled based on said number of cycles.

6. (PREVIOUSLY PRESENTED) An information processing apparatus, comprising:
a control unit to process an operation instruction, which does not have a functional specification, as a specific application-purpose operation instruction;

a specific application-purpose instruction operating unit to support a flexible pipeline structure and to carry out an operation of the specific application-purpose operation instruction for each application field;

a rewritable register to prescribe a number of cycles from when an instruction of said specific application-purpose instruction operating unit is issued to when it becomes possible to issue an immediately subsequent instruction that is same as the instruction of said specific application-purpose instruction operation unit, wherein the instruction of said specific application-purpose instruction operating unit occupies an operating unit source; and

a flag provided within a processor core of the processing apparatus,

wherein said flag changes over between a case where a number of cycles, which is prescribed from when an instruction of said specific application-purpose instruction operating unit is issued to when it becomes possible to issue the same instruction in succession, becomes the same as another number of cycles, which is prescribed from when the instruction of the specific application-purpose instruction operating unit is issued to when it becomes possible to use a result thereof, and a case where it is possible to issue the same instruction in succession in each cycle, and said issuing of the instructions is controlled based on the flag.

7-12 (CANCELLED)

13. (CURRENTLY AMENDED) The exception processing method according to claim 4-7, further comprising:

~~confirming whether an instruction for breaking is the~~ determining before the execution of the execution processing, whether to perform the exception processing by checking whether the

Serial No. 09/741,802

second instruction causing the interruption is a specific application-purpose operation instruction.

14. (CURRENTLY AMENDED) ~~The exception processing method according to claim 17, further comprising~~ An exception processing method for a processor that executes a program including a first instruction and a second instruction, and that performs, after an interruption caused by the second instruction and before execution of interrupt processing, exception processing for an exception that has occurred during execution of the first instruction, wherein the first instruction is a specific application-purpose operation instruction, the exception processing method comprising:

setting, when the exception occurs during the execution of the first instruction, a value indicating occurrence of the exception in a register or a flag;

determining when the interruption is caused by the second instruction, whether the exception has occurred by reading the register or the flag;

performing the exception processing for the first instruction, if the exception has occurred according to the reading of the register or the flag; and

performing the interrupt processing for the second instruction to return from the interruption~~storing a value, which indicates the detection of the operation exception during the execution of the specific application purpose operation instruction, in a memory, and confirming whether an operation exception has been detected or not by referring to the content of said memory.~~

15. (CURRENTLY AMENDED) The exception processing method according to ~~claim 17~~claim 14, further comprising:

determining before the execution of the exception processing, whether to perform the exception processing by reading a second register or a second flag that stores an operation mode indicating to the processor whether to perform the exception processing~~storing a value in a register or a flag indicating that the operation state has been set to a state where the operation exception, which occurs during the execution of a specific application-purpose operation instruction, is detected, and~~

Serial No. 09/741,802

~~confirming whether the operation state has been set to the state where the operation exception is detected by referring to said register or said flag.~~

16. (CURRENTLY AMENDED) The exception processing method according to ~~claim~~ claim 14, further comprising:

~~determining before the execution of the exception processing, whether to perform the exception processing by checking whether the second instruction that has caused the interruption is a predetermined instruction generating an instruction setting a state, which indicates that the operation exception that occurs during the execution of the specific application purpose operation instruction, is detected; and~~

~~confirming whether the instruction is the instruction for setting the state, which indicates that the operation exception that occurs during the execution of the specific application purpose operation instruction, is detected.~~

17. (CURRENTLY AMENDED) ~~An~~ The exception processing method of a specific application purpose operation instruction detecting an operation exception which occurs during execution of a specific application purpose operation instruction and carrying out an exceptional processing when the operation exception is detected, the exception processing method according to claim 14, further comprising:

~~determining before the execution of the exception processing, whether to perform the exception processing by checking whether a value, which is stored in a second register or a second flag and is associated with the second instruction that has caused the interruption, indicates the processor to perform the exception processing saving a context after an execution of a program has been interrupted;~~

~~storing a value in a register or a flag indicating that an instruction address, which has interrupted the execution of a program, is to detect the operation exception that occurs during the execution of the specific application purpose operation instruction;~~

~~confirming whether the operation state has been set to a state indicating detection of the operation exception, which occurs during the execution of a specific application purpose operation instruction, by referring to the content of said register or said flag;~~

~~carrying out the exceptional processing when confirmed according to the confirming that the operation exception has been detected during the execution of the specific application purpose operation instruction; and~~

Serial No. 09/741,802

~~returning from an interruption.~~

18. (CURRENTLY AMENDED) The exception processing method according to claim 14, further comprising:

~~determining before the execution of the exception processing, whether to perform the exception processing by checking whether an instruction address of the second instruction that has caused the interruption matches any one of instruction addresses stored in a table in a memory storing a value which indicates a breakpoint to detect the operation exception that occurs during the execution of the specific application-purpose operation instruction in a memory, and~~

~~confirming whether the operation state has been set to the state where the operation exception is detected by referring to the content of said memory.~~

19. CANCELLED.

20. (PREVIOUSLY PRESENTED) An information processing apparatus having a specific application-purpose operation instruction, said information processing apparatus comprising:

an operation exception detection flag indicating whether an operation exception has been detected;

a specific application-purpose operation instruction executing unit setting said operation exception detection flag to a valid state when the operation exception has been detected during the execution of the specific application-purpose operation instruction; and

a flag control unit which notifies an interruption control unit that an interruption due to the operation exception of the specific application-purpose operation instruction is to be generated, when said operation exception detection flag has been set to the valid state during the execution of a trap instruction to generate the interruption,

wherein

said interruption control unit carries out a control relating to the generation of an interruption, when said interruption control unit has received a notice that the interruption is generated, and

when said flag control unit has received an operation exception detection flag invalidate instruction, said flag control unit invalidates said operation exception detection flag.

Serial No. 09/741,802

21. (PREVIOUSLY PRESENTED) An information processing apparatus having a specific application-purpose operation instruction, said information processing apparatus comprising:

an operation exception detection flag indicating whether an operation exception has been detected;

a specific application-purpose operation instruction executing unit setting said operation exception detection flag to a valid state when the operation exception has been detected during the execution of the specific application-purpose operation instruction; and

a flag control unit which notifies an interruption control unit that an interruption due to the operation exception of the specific application-purpose operation instruction is to be generated, when said operation exception detection flag has been set to the valid state during the execution of a trap instruction to generate the interruption,

wherein said interruption control unit carries out a control relating to the generation of an interruption, when said interruption control unit has received a notice that the interruption is generated, and when said flag control unit has received an operation exception detection flag read instruction, said flag control unit reads the value of said operation exception detection flag.

22. (PREVIOUSLY PRESENTED) An information processing apparatus having a specific application-purpose operation instruction, said information processing apparatus comprising:

an operation exception detection flag indicating whether an operation exception has been detected;

a specific application-purpose operation instruction executing unit setting said operation exception detection flag to a valid state when the operation exception has been detected during the execution of the specific application-purpose operation instruction; and

a flag control unit which notifies an interruption control unit that an interruption due to the operation exception of the specific application-purpose operation instruction is to be generated, when said operation exception detection flag has been set to the valid state during the execution of a trap instruction to generate the interruption,

wherein said interruption control unit carries out a control relating to the generation of an interruption, when said interruption control unit has received a notice that the interruption is generated, and when said flag control unit has received an operation exception detection flag

Serial No. 09/741,802

write instruction, said flag control unit writes a value into said operation exception detection flag.

23. CANCELLED

24. (PREVIOUSLY PRESENTED) An information processing apparatus having a specific application-purpose operation instruction, said information processing apparatus comprising:

an operation exception detection flag indicating whether an operation exception has been detected;

a condition code register that is set based on a value that is held in said operation exception detection flag;

a specific application-purpose operation instruction executing unit setting said operation exception detection flag to a valid state when the operation exception has been detected during an execution of the specific application-purpose operation instruction;

a flag control unit setting the condition code register based on a value that is held in said operation exception detection flag; and

a branch/interruption return instruction control unit determining whether an interruption is generated or not based on a value held in said condition code register and a value shown by an instruction field during the execution of a trap instruction to generate the interruption, and, when the interruption is to be generated, notifying an interruption control unit that the interruption due to the operation exception of a specific application-purpose operation instruction is to be generated,

wherein said interruption control unit carries out a control relating to the generation of an interruption, when said interruption control unit has received a notice that the interruption is generated.

25. (PREVIOUSLY PRESENTED) The information processing apparatus according to claim 24, wherein

when said flag control unit receives an operation exception detection flag invalidate instruction, said flag control unit invalidates said operation exception detection flag.

26. (PREVIOUSLY PRESENTED) The information processing apparatus according to claim 24, wherein

Serial No. 09/741,802

when said flag control unit receives an operation exception detection flag read instruction, said flag control unit reads the value of said operation exception detection flag.

27. (PREVIOUSLY PRESENTED) The information processing apparatus according to claim 24, wherein

when said flag control unit receives an operation exception detection flag write instruction, said flag control unit writes the value into said operation exception detection flag.

28. (ORIGINAL) The information processing apparatus according to claim 24, wherein

said information processing apparatus has an instruction having an operational function specialized for an image processing as the specific application-purpose operation instruction.

29- 31 CANCELLED

32. (CANCELLED)